

Claims

1. A method for detection of a defect or failure of a compressed air load circuit in a compressed air system for vehicles, wherein the pressure in the lines to the compressed air load circuits is continuously monitored and evaluated,
characterized by the following steps:
 - momentary shutoff of at least one of the compressed air load circuits,
 - measurement of the values and/or determination of gradients of a variable of state (pressure, air flow rate, air mass, energy) during the shutoff time in at least one of the compressed air load circuits,
 - comparison of the values and/or gradients with a respective threshold value,
 - detection of a compressed air load circuit as defective or failed when the values of its variables of state and/or gradients of its variables of state drop below the threshold value in the shutoff phase and/or after the shutoff phase.
2. A method according to claim 1, **characterized in that** definitive or permanent shutoff of the air-load circuit detected as defective or failed is applied.
3. A method according to claim 1, **characterized in that** momentary shutoff (pulsed shutoff) occurring several times in succession is provided.
4. A method according to claim 3, **characterized in that** the variation of the measured values and/or of the determined gradients of the variables of state is tracked during the brief shutoff phases and in that the compressed air load circuits whose values or gradients of variables of state are below the respective threshold

value even after completion of the predefinable number of brief shutoff phases are definitively or permanently shut off.

5. A method according to one of the preceding claims, **characterized in that** the intact compressed air circuits are refilled after the definitive shutoff of the defective compressed air load circuit or of the defective compressed air load circuits.
6. A method according to claim 2, 3 or 4, **characterized in that** shutoff of the intact compressed air load circuits is cancelled once again after definitive shutoff of the defective compressed air load circuits.
7. A method according to claim 1, 3 or 4, **characterized in that** the threshold value corresponds to the variable of state to be adjusted in the respective compressed air load circuit.
8. A device for detection of a defect or failure of a compressed air load circuit with a compressed air system, which is provided with a compressed air supply part provided with a compressor and a consumer part with a plurality of compressed air load circuits, which are supplied with compressed air via electrically actuatable valves, wherein the pressure in the compressed air load circuits is monitored by sensors, whose electrical signals are evaluated by an electronic control unit that controls the electrically actuatable valves, **characterized in that** at least one of the electrically actuatable valves (16, 18, 20, 22) of the compressed

air load circuit (26, 28, 30, 32, 34, 36) can be switched momentarily by the control unit (84) to a shut-off state for detection of the defect or failure of a compressed air load circuit, wherein the control unit compares measured values and/or determined gradients of a variable of state (pressure, air flow rate, air mass, energy) obtained during the shutoff time with a respective threshold value and identifies the compressed air circuit whose values and/or gradients of variables of state are below the threshold value as a defective or failed compressed air load circuit.

9. A device according to claim 8, **characterized in that** the control unit (84) leaves the electrically actuatable valve associated with the compressed air load circuit identified as defective or failed in shut-off state, whereas the electrically actuatable valves of the other compressed air load circuits are switched to the open normal state once again.
10. A device according to claim 8, **characterized in that** the control unit (84) briefly switches at least one electrically actuatable valve (16, 18, 20, 22) of the compressed air load circuits (26, 28, 30, 32, 34, 36) several times in succession to blocked state.
11. A device according to claim 10, **characterized in that** the control unit (84) determines the values and/or the gradients of the variables of state during the shutoff phases and, after completion of a predefinable number of shutoff phases, detects the compressed air load circuits whose values or gradients of variables of

state are below the respective threshold value as defective or failed circuits and turns them off definitively or permanently.

12. A device according to claim 11, **characterized in that** the control unit (84) switches the electrically actuatable valves of the intact compressed air load circuits to the open de-energized normal state once again.
13. A device according to claim 11 or 12, **characterized in that** the intact compressed air load circuits are refilled after the electrically actuatable valves have been switched to their open normal state.
14. A device according to claim 8 or 10, **characterized in that** the threshold value corresponds to the value of the variable of state to be adjusted in the respective load circuit.
15. A device according to one of claims 8 to 14, **characterized in that** the electrically actuatable valves are solenoid valves.